APPENDIX A - CLAIM AMENDMENTS

Serial No.: 09/622,089
Docket No.: 490042-87

1. (Canceled)

2. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 wherein a lower surface of the connecting hole is positioned above a gas injecting portion of the plurality of gas injecting nozzles.

3. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 or 2 wherein a diameter of the opening on the upstream side of the connecting hole is gradually reduced toward the downstream side.

4. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 or 2 wherein a lower surface portion of the opening on the upstream side of the connecting hole protrudes from an end surface of the partition plate toward the upstream side.

5. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 4 wherein a corner portion of an upper surface of a protruding portion is obliquely cut.

6. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 4 wherein an upper surface of a protruding portion is slanted downward from the upstream side toward the downstream side.

7. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 or 2 wherein the connecting hole is slanted downward from the upstream side toward the downstream side.

8. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 6 wherein an angle of slant is greater than an angle of repose of the raw material fines.

9. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 wherein a lower surface portion of the opening on the downstream side of the connecting hole protrudes from an end surface of the partition plate toward the downstream side.

10. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 9 wherein a corner portion of an upper surface of a protruding portion is obliquely cut.

11. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 wherein the connecting hole protrudes from both end surfaces of the partition plate on the upstream and downstream sides.

12. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim [1] 49 wherein one or more gas injecting nozzles are provided in a middle portion of the connecting hole, and a reaction gas is injected from the gas injecting nozzle into the connecting hole.

13. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 12 wherein a porous material is used as a tip of the gas injecting nozzle.

14. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 12 wherein a tip of the gas injecting nozzle is obliquely bent from the upstream side toward the downstream side.

15. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of claim 3, wherein the connecting hole is slanted downward from the upstream side toward the downstream side.

16. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of claim 7, wherein an angle of slant is greater than an angle of repose of the raw material fines.

17. (Canceled)

18. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 wherein a lower surface of the connecting hole is positioned above a gas injecting portion of the plurality of gas injecting nozzles.

19. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 or 18 wherein a diameter of the opening on the upstream side of the connecting hole is gradually reduced toward the downstream side.

20. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 or 18 wherein a lower surface portion of the opening on the upstream side of the connecting hole protrudes from an end surface of the partition plate toward the upstream side.

21. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 20 wherein a corner portion of an upper surface of a protruding portion is obliquely cut.

22. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 20 wherein an upper surface of a protruding portion is slanted downward from the upstream side toward the downstream side.

23. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 or 18 wherein the connecting hole is slanted downward from the upstream side toward the downstream side.

24. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 22 wherein an angle of slant is greater than an angle of repose of the raw material fines.

25. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 wherein a lower surface portion of the opening on the downstream side of the connecting hole protrudes from an end surface of the partition plate toward the downstream side.

26. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 25 wherein a corner portion of an upper surface of a protruding portion is obliquely cut.

27. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 wherein the connecting hole protrudes from both end surfaces of the partition plate on the upstream and downstream sides.

28. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim ~~17~~ 50 wherein one or more gas injecting nozzles are provided in a middle portion of the connecting hole, and a reaction gas is injected from the gas injecting nozzle into the connecting hole.

29. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 28 wherein a porous material is used as a tip of the gas injecting nozzle.

30. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 28 wherein a tip of the gas injecting nozzle is obliquely bent from the upstream side toward the downstream side.

31. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of claim 19, wherein the connecting hole is slanted downward from the upstream side toward the downstream side.

32. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of claim 23, wherein an angle of slant is greater than an angle of repose of the raw material fines.

33. (Canceled)

34. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ wherein a lower surface of the connecting hole is positioned above a gas injecting portion of the plurality of gas injecting nozzles.

35. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ or 34 wherein a diameter of the opening on the upstream side of the connecting hole is gradually reduced toward the downstream side.

36. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ or 34 wherein a lower surface portion of the opening on the upstream side of the connecting hole protrudes from an end surface of the partition plate toward the upstream side.

37. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 36 wherein a corner portion of an upper surface of a protruding portion is obliquely cut.

38. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 36 wherein an upper surface of a protruding portion is slanted downward from the upstream side toward the downstream side.

39. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ or 34 wherein the connecting hole is slanted downward from the upstream side toward the downstream side.

40. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 38 wherein an angle of slant is greater than an angle of repose of the raw material fines.

41. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ wherein a lower surface portion of the opening on the downstream side of the connecting hole protrudes from an end surface of the partition plate toward the downstream side.

42. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 41 wherein a corner portion of an upper surface of a protruding portion is obliquely cut.

43. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ wherein the connecting hole protrudes from both end surfaces of the partition plate on the upstream and downstream sides.

44. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 51 ~~33~~ wherein one or more gas injecting nozzles are provided in a middle portion of the connecting hole, and a reaction gas is injected from the gas injecting nozzle into the connecting hole.

45. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 44 wherein a porous material is used as a tip of the gas injecting nozzle.

46. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of Claim 44 wherein a tip of the gas injecting nozzle is obliquely bent from the upstream side toward the downstream side.

47. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of claim 35, wherein the connecting hole is slanted downward from the upstream side toward the downstream side.

48. (Currently amended) The ~~multi-partitioned fluidized bed~~ reactor system of claim 39, wherein an angle of slant is greater than an angle of repose of the raw material fines.

49. (New) A fluidized bed reactor system comprising:

a reaction vessel, the vessel including first, second and third compartments bounded by a floor and separated by first and second partition plates,

first, second and third fluidized beds contained within said first, second, and third compartments, the third fluidized bed having a height that is lower than the height of the second fluidized bed and the second fluidized bed having a height that is lower than the height of the first fluidized bed;

at least one connecting hole in each of said partition plates, said connecting hole elevated from said floor at a height that is one-quarter or less of said fluidized bed height, said connecting hole having a horizontal length of at least 100 mm and adapted to move raw material fines from one side of the reactor to another, said movement caused by the difference in fluidized bed heights of said first, second and third compartments,

a plurality of gas distribution ports positioned in a uniform horizontal plane in said floor; and

a plurality of gas injecting nozzles having a uniform gas flow rate for moving said raw material fines from an inlet of said reactor to a discharge of said reactor, said plurality of gas injecting nozzles including a vertical gas injecting nozzle positioned in said gas distribution ports, said vertical gas injecting nozzle injecting gas in a substantially vertical direction;

wherein the distance between an inlet of said connecting hole and the upstream side of said vertical nozzle is greater than 150 mm and the distance between an outlet of said connecting hole and the downstream side of said vertical nozzle is greater than 50 mm; and

further wherein an angle formed by a line connecting a corner portion of an upper surface of said connecting hole and an end surface of a downstream side of a base portion of said gas injecting nozzle with respect to a horizontal plane is greater than an angle of repose of said raw material fines in any of openings on upstream and downstream sides of the connecting hole.

50. (New) A fluidized bed reactor system comprising:

a reaction vessel, the vessel including first, second and third compartments bounded by a floor and separated by first and second partition plates,

first, second and third fluidized beds contained within said first, second, and third compartments, the third fluidized bed having a height that is lower than the height of the second fluidized bed and the second fluidized bed having a height that is lower than the height of the first fluidized bed;

at least one connecting hole in each of said partition plates, said connecting hole elevated from said floor at a height that is one-quarter or less of said fluidized bed height, said connecting hole having a horizontal length of at least 100 mm and adapted to move raw material fines from one side of the reactor to another, said movement caused by the difference in fluidized bed heights of said first, second and third compartments,

a plurality of gas distribution ports positioned in a uniform horizontal plane in said floor; and

a plurality of gas injecting nozzles having a uniform gas flow rate for moving said raw material fines from an inlet of said reactor to a discharge of said reactor, said plurality of gas injecting nozzles including a horizontal gas injecting nozzle positioned in said gas distribution ports, said vertical gas injecting nozzle injecting gas in a substantially horizontal direction;

wherein the distance between an inlet of said connecting hole and the upstream side of said horizontal nozzle is greater than 200 mm and the distance between an outlet of said connecting hole and the downstream side of said horizontal nozzle is greater than 100 mm; and

further wherein an angle formed by a line connecting a corner portion of an upper surface of said connecting hole and an end surface of a downstream side of a base portion of said gas injecting nozzle with respect to a horizontal plane is greater than an angle of repose of said raw material fines in any of openings on upstream and downstream sides of the connecting hole.

51. (New) A fluidized bed reactor system comprising:

a reaction vessel, the vessel including first, second and third compartments bounded by a floor and separated by first and second partition plates,

first, second and third fluidized beds contained within said first, second, and third compartments, the third fluidized bed having a height that is lower than the height of the second fluidized bed and the second fluidized bed having a height that is lower than the height of the first fluidized bed;

at least one connecting hole in each of said partition plates, said connecting hole elevated from said floor at a height that is one-quarter or less of said fluidized bed height, said connecting hole having a horizontal length of at least 100 mm and adapted to move raw material fines from one side of the reactor to another, said movement caused by the difference in fluidized bed heights of said first, second and third compartments,

a plurality of gas distribution ports positioned in a uniform horizontal plane in said floor; and

a plurality of gas injecting nozzles having a uniform gas flow rate for moving said raw material fines from an inlet of said reactor to a discharge of said reactor, said plurality of gas

injecting nozzles including an oblique gas injecting nozzle positioned in said gas distribution ports, said oblique gas injecting nozzle injecting gas in a substantially oblique direction;

wherein the distance between an inlet of said connecting hole and the upstream side of said vertical nozzle is greater than 200 mm and the distance between an outlet of said connecting hole and the downstream side of said vertical nozzle is greater than 100 mm; and

further wherein an angle formed by a line connecting a corner portion of an upper surface of said connecting hole and an end surface of a downstream side of a base portion of said gas injecting nozzle with respect to a horizontal plane is greater than an angle of repose of said raw material fines in any of openings on upstream and downstream sides of the connecting hole.